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FILE COVERS 1907 - 21 Mar 2006 VOL 144 ISS 13
FILE LAST UPDATED: 20 Mar 2006 (20060320/ED)

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    719907 CATALYSTS
L1      919555 CATALYST
                  (CATALYST OR CATALYSTS)
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155829 PALLADIUM
(PALLADIUM OR PALLADIUMS)
I-2 59588 I-1 AND PALLADIUM

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L5 1387 L4 AND HYDROGENAT?

=> s 14 and hydrogenation
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2221 HYDROGENATIONS
171320 HYDROGENATION
(HYDROGENATION OR HYDROGENATIONS)
L6 1367 L4 AND HYDROGENATION

=> s 15 and element
688619 ELEMENT
631620 ELEMENTS
1124975 ELEMENT
(ELEMENT OR ELEMENTS)
L7 203 L5 AND ELEMENT

=> s 17 and periodic table
90938 PERIODIC
7 PERIODICS
90941 PERIODIC
(PERIODIC OR PERIODICS)
70590 TABLE
39014 TABLES
106062 TABLE
(TABLE OR TABLES)
7559 PERIODIC TABLE
(PERIODIC(W) TABLE)
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The search profile that was entered contains terms or
nested terms that are not separated by a logical operator.

=> d 18 ibib hitstr abs 1-9

L8 ANSWER 1 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:1345973 CAPLUS
DOCUMENT NUMBER: 144:87954
TITLE: Processes for the preparation of higher molecular
weight saturated ketones
INVENTOR(S): Barnicki, Scott Donald; Mccusker-Orth, Jennifer Ellen;
Knight, Joseph Franklin; Miller, Jerry Lynn
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 14 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2005288533	A1	20051229	US 2004-877339	20040625
EP 1616850	A1	20060118	EP 2005-13578	20050623
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU				

PRIORITY APPLN. INFO.: US 2004-877339 A 20040625

OTHER SOURCE(S): MARPAT 144:87954

AB Continuous single-step processes for producing higher mol. weight ketones are disclosed that involve a liquid-phase crossed condensation of an aldehyde with a ketone in the presence of a **hydrogenation catalyst** and a small amount of a **catalyst** comprising a concentrated hydroxide or alkoxide of an alkali-**metal** (from group 1 or group IA of the **periodic table of the elements**) or alkaline earth **metal** (from group 2, or group IIA **elements**), wherein the amount of water provided to the reaction mixture, or reaction zone, is relatively low, with respect to the total initial weight of the reaction mixture. The reaction may be carried out in the absence of solubilizing agents or phase transfer agents. The product mixture is largely free of byproducts resulting from further condensation reactions of the desired ketone product or intermediates, and free of the self-condensation products of the reactant aldehyde, that are afterward difficult to remove from the reaction mixture. Thus, in a continuous mode of operation utilizing a 1 L autoclave, with 500 mL of working volume, 20 g 1% Pd/C **catalyst** (Engelhard CG-31) was loaded into the autoclave, followed by pumping 50 weight% NaOH solution at 0.065 mL/min. and a mixture of acetone and n-butyraldehyde (10:1 molar ratio) at 49.93 mL/min. into the autoclave with a residence time of approx. 10 min. The system was pressurized with H at 300 psig and heated to 105° and allowed to reach steady state operation and run for an addnl. 3 h at steady state before sampling to give a product composition containing acetone 57.33, n-butyraldehyde 0.36, Me iso-Bu ketone 3.99, Me amyl ketone 24.96, 3-hepten-2-one 0.55, 2-ethylhexaldehyde 0.00, and high and low boilers 1.55% with 97.95% n-butyraldehyde conversion, 88.43% selectivity for Me amyl ketone, and space time yield of 39.0 lb/ft³-h.

L8 ANSWER 2 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:29249 CAPLUS

DOCUMENT NUMBER: 142:77310

TITLE: **Catalyst** and process for the preparation of middle distillates and lube bases starting from hydrocarbon feedstocks

INVENTOR(S): Calemma, Vincenzo; Flego, Cristina; Carluccio, Luciano Cosimo; Parker, Wallace; Giardino, Roberto; Faraci, Giovanni

PATENT ASSIGNEE(S): ENI S.p.A., Italy; Enitecnologie S.p.A.

SOURCE: PCT Int. Appl., 76 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005002726	A1	20050113	WO 2004-EP6933	20040625
WO 2005002726	C1	20050506		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,

LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI,
 NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY,
 TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
 RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
 AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,
 EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE,
 SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,
 SN, TD, TG

PRIORITY APPLN. INFO.: IT 2003-MI1362 A 20030703

AB A solid **catalyst** for hydrotreating processes of hydrocarbons, comprising: (A) a **support** of an acidic nature consisting of a catalytically active porous solid, including silicon, aluminum, phosphorus and oxygen bonded to one another in such a way as to form a mixed amorphous solid characterized by an Si/Al atomic ratio of between 15 and 250, a P/Al ratio of at least 0.1, but lower than 5, a total pore volume ranging from 0.5 to 2.0 mL/g, with an average pore diameter ranging from 3 nm to 40 nm, and a sp. surface area ranging from 200 to 1000 M²/g; (B) at least one **metal** with a hydro-dehydrogenating activity selected from groups 6 to 10 of the **periodic table of elements**, dispersed on said **support** (A) in an amount of between 0.05 and 5% by weight with respect to the total weight of the **catalyst**. Said **catalyst** is advantageously used in hydrocracking processes of hydrocarbon mixts., for obtaining fuels and lubricating bases.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 3 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:740039 CAPLUS
 DOCUMENT NUMBER: 141:243970
 TITLE: **Catalysts for the chemoselective hydrogenation of alkynes and alkadienes into alkenes**
 INVENTOR(S): Molinier, Michel; Ou, John Di-yi; Risch, Michael A.
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. Pat. Appl. Publ., 8 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004176651	A1	20040909	US 2003-379495	20030304
WO 2004078888	A1	20040916	WO 2004-US6662	20040304
W: AE, AE, AG, AL, AL, AM, AM, AM, AT, AT, AU, AZ, AZ, BA, BB, BG, BG, BR, BR, BW, BY, BY, BZ, BZ, CA, CH, CN, CN, CO, CO, CR, CR, CU, CU, CZ, CZ, DE, DE, DK, DK, DM, DZ, EC, EC, EE, EE, EG, ES, ES, FI, FI, GB, GD, GE, GE, GH, GM, HR, HR, HU, HU, ID, IL, IN, IS, JP, JP, KE, KE, KG, KG, KP, KP, KP, KR, KR, KZ, KZ, KZ, LC, LK, LR, LS, LS, LT, LU, LV, MA, MD, MD, MG, MK, MN, MW, MX, MX, MZ, MZ, NA, NI				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				

PRIORITY APPLN. INFO.: US 2003-379495 A 20030304

AB **Catalysts** have been discovered that are useful in

hydrogenation reactions, and particularly for the chemoselective hydrogenation of acetylene and/or methylacetylene and/or propadiene in light olefin-rich feedstreams into the corresponding alkenes. These catalysts can selectively hydrogenate acetylene with less selectivity to making oligomers (green oil) as compared with existing com. catalysts, particularly palladium catalysts. These catalysts are non-palladium catalysts, and have three different constituents that are metal or metal-based components. The metal of the first constituent may be nickel or platinum, the metal of the second constituent may be from Groups 1-10, and the metal of the third constituent may be from Groups 11-12, where the Groups are of the Periodic Table of Elements (new IUPAC notation).

L8 ANSWER 4 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2003:609495 CAPLUS
 DOCUMENT NUMBER: 139:135872
 TITLE: New porous silicate materials and their uses as catalytic systems for diesel improvement
 INVENTOR(S): Roziere, Jacques; Jones, Deborah; Jacquin, Melanie; Jimenez-Lopez, Antonio; Rodriguez-Castellon, Enrique; Maireles-Torres, Pedro; Trejo-Menayo, Jose-Manuel; Vaccari, Angelo; Lenarda, Maurizio; Busca, Guido
 PATENT ASSIGNEE(S): Centre National de la Recherche Scientifique CNRS, Fr.; Universite De Montpellier II; Universidad Malaga; Repsol Petroleo SA; Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali (INSTM)
 SOURCE: Eur. Pat. Appl., 19 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1332795	A1	20030806	EP 2002-290241	20020201
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
WO 2003064031	A2	20030807	WO 2003-IB318	20030131
WO 2003064031	A3	20040617		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1485201	A2	20041215	EP 2003-702824	20030131
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
US 2005181930	A1	20050818	US 2003-503381	20030131
PRIORITY APPLN. INFO.:			EP 2002-290241	A 20020201
			WO 2003-IB318	W 20030131

AB Multifunctional Si-based porous catalytic system comprises ≥ 1 porous catalytic support structurally comprising SiO₂ and ≥ 1 other metal or nonmetal oxide chosen from Al, Zr, and B, the catalytic support being synthesized together with ≥ 1 surface active agents, and ≥ 1 or more catalyst chosen from among metallic elements of columns 8, 9 and 10 of the periodic table of the elements. The catalytic systems are useful in hydrogenation and/or decyclization reactions of (poly)aromatic compds., especially for improving the quality of diesel fuels and increasing their cetane number

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 5 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2001:222036 CAPLUS
 DOCUMENT NUMBER: 134:224909
 TITLE: Catalyst based on a noble Group VIII metal containing silicon and possibly boron, and its use in hydrotreating hydrocarbon-containing feeds
 INVENTOR(S): Kasztelan, Slavik; Mignard, Samuel; Harle, Virginie; Marchal-George, Nathalie
 PATENT ASSIGNEE(S): Institut Francais du Petrole, Fr.
 SOURCE: U.S., 8 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6207870	B1	20010327	US 1999-305480	19990506
US 2002082165	A1	20020627	US 2000-513177	20000225
US 6541417	B2	20030401		
PRIORITY APPLN. INFO.:			FR 1998-5	A 19980507
			FR 1998-5846	A 19980507
			US 1999-305480	A3 19990506

AB The invention provides a catalyst including a support, at least one noble metal from Group VIII of the periodic table, silicon as a dopant, optionally boron, optionally at least one Group VIB element, optionally phosphorous and optionally at least one halogen. The invention also provides a particular preparation of the catalyst. The invention also concerns the use of this catalyst in the hydrotreatment of hydrocarbon-containing feeds, more particularly its use for hydrogenating aromatic compds. in a gas oil cut.

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 6 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1999:116744 CAPLUS
 DOCUMENT NUMBER: 130:127314
 TITLE: Catalysts for selective removal of diolefins, styrene compounds, and mercaptans from unsaturated naphthas
 INVENTOR(S): Didillon, Blaise; Uzio, Denis; Cameron, Charles; Gautreau, Christophe
 PATENT ASSIGNEE(S): Institut Francais Du Petrole, Fr.

SOURCE: Fr. Demande, 12 pp.

CODEN: FRXXBL

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2764299	A1	19981211	FR 1997-7214	19970609
FR 2764299	B1	19990716		
EP 884373	A1	19981216	EP 1998-401224	19980520
EP 884373	B1	20030319		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
CA 2239078	AA	19981209	CA 1998-2239078	19980608
JP 11005986	A2	19990112	JP 1998-160919	19980609
PRIORITY APPLN. INFO.: FR 1997-7213 A 19970609 FR 1997-7214 A 19970609				

AB Diolefins, styrene-type compds., and mercaptans are removed from pyrolysis naphtha and from catalytic-cracked naphtha in a fixed-bed hydrogenation-hydrodesulfurization process over a refractory oxide-supported catalyst chosen from at least one noble metal of Group VIII (preferably Pd) and at least one metal from Group VIB (preferably Mo or W) elements of the Periodic Table. The metals are present at an amount on the support of 0.2-5 weight% for the Group VIII metal and 0.5-5 weight% for the Group VIB metal. Catalyst supports are selected from alumina, silica, silica-alumina, and magnesia, preferably alumina with sp. surface area 5-200 m²/g and pore volume 0.4-1 cm³/g. Hydrogenation-hydrodesulfurization is typically carried out at 10-200° and 1-20 h⁻¹ space velocity with H₂ present in excess based on stoichiometry. Thus, an Al₂O₃-supported catalyst containing 0.3 weight% Pd and 3.0 weight% W showed conversions of styrene, isoprene, and pentanethiol of 99.6, 99.8, and 80%, resp., for processing (at 30 bars, 90°, and 3 h⁻¹ space velocity) of a test feedstock containing 10% styrene, 10% isoprene, and 250 ppm pentanethiol in heptane.

L8 ANSWER 7 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1999:116742 CAPLUS

DOCUMENT NUMBER: 130:127313

TITLE: Catalysts for selective removal of diolefins

and styrene compounds from steam cracking naphthas

INVENTOR(S): Didillon, Blaise; Uzio, Denis; Cameron, Charles;
Gautreau, Christophe

PATENT ASSIGNEE(S): Institut Francais Du Petrole, Fr.

SOURCE: Fr. Demande, 12 pp.

CODEN: FRXXBL

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2764210	A1	19981211	FR 1997-7213	19970609
FR 2764210	B1	19990716		
EP 884373	A1	19981216	EP 1998-401224	19980520

EP 884373	B1	20030319		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
EP 884102	A1	19981216	EP 1998-401226	19980520
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
CA 2239075	AA	19981209	CA 1998-2239075	19980608
CA 2239078	AA	19981209	CA 1998-2239078	19980608
JP 11005986	A2	19990112	JP 1998-160919	19980609
JP 11010001	A2	19990119	JP 1998-160918	19980609
US 6686309	B1	20040203	US 1998-93807	19980609
PRIORITY APPLN. INFO.:				
FR 1997-7213 A 19970609				
FR 1997-7214 A 19970609				

AB Diolefins and styrene-type compds. are removed from naphthas (especially a steam

cracking-derived naphtha) by **hydrogenation** over refractory oxide-supported **catalyst** chosen from at least one noble metal of Group VIII and at least one metal from Group VIB elements of the Periodic Table. The metals are present at an amount on the **support** of 0.2-5 weight% for the Group VIII metal and 0.5-5 weight% for the Group VIB metal. Preferred catalysts are Pd (for the Group VIII element) and Mo and W (for the Group VIB element). Catalyst supports are selected from alumina, silica, silica-alumina, and magnesia, preferably alumina with sp. surface area 5-200 m²/g and pore volume 0.4-1 cm³/g. Hydrogenation is typically carried out at 10-200° and 1-20 h⁻¹ space velocity with H₂ present in excess based on stoichiometry.

L8 ANSWER 8 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1989:57113 CAPLUS
 DOCUMENT NUMBER: 110:57113
 TITLE: Preparation of amines by catalytic
hydrogenation of amides
 INVENTOR(S): Dobson, Ian David
 PATENT ASSIGNEE(S): BP Chemicals Ltd., UK
 SOURCE: Eur. Pat. Appl., 11 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 286280	A1	19881012	EP 1988-302628	19880324
EP 286280	B1	19910828		
R: BE, DE, FR, GB, IT, NL				
US 4937384	A	19900626	US 1988-168852	19880316
JP 63255253	A2	19881021	JP 1988-68353	19880324
CN 88101657	A	19881109	CN 1988-101657	19880326
GB 1987-7305 A 19870326				

PRIORITY APPLN. INFO.: MARPAT 110:57113

OTHER SOURCE(S):
 AB Amines are produced by **hydrogenation** of amides R₁CONR₂R₃ [R₁ = H, (substituted) PhCH₂, aryl, etc.; R₂, R₃ = H, (substituted) aliphatic groups] in the presence as **catalyst** of a composition comprising as a first component (i) a noble metal of group VIII of the Periodic Table of the Elements and (ii) Re, and as a second component either an alumina or a zeolite. A magnetically

stirred autoclave was charged with MeCH₂CONH₂, dioxane, zeolite 4A, and 2.5% Pd and 5% Re on high surface area graphite **support** and was then pressurized with H (2000 psig). The reaction was allowed to proceed at 200° for 6 h to give a mixture of PrNH₂, Pr₂NH, and Pr₃N with 96% conversion of amides to products and 74.4% selectivity to amines.

L8 ANSWER 9 OF 9 CAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1988:454124 CAPLUS
 DOCUMENT NUMBER: 109:54124
 TITLE: Methanol and methane formation over **palladium** dispersed on the lanthanide rare earth oxides
 AUTHOR(S): Vannice, M. Albert; Sudhakar, Chakka; Freeman, Mark
 CORPORATE SOURCE: Dep. Chem. Eng., Pennsylvania State Univ., University Park, PA, 16802, USA
 SOURCE: Journal of Catalysis (1987), 108(1), 97-111
 CODEN: JCTLA5; ISSN: 0021-9517
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB The effect of the rare earth oxide (REO) **support** on the CO **hydrogenation** reaction over Pd was studied by dispersing this **metal** on the oxides of the late lanthanide **elements** (Tb through Lu). The Pd surface area was measured before and after kinetic runs at 0.1 MPa (1 atm) and 1.5 MPa with these Pd/REO **catalysts**. Methanation activation energies were 30.4 ± 1.1 kcal mol⁻¹. The turnover frequency (TOF) at 548 K for methane ranged from 1.2-4.8 + 10⁻³ s⁻¹, which is up to 40 times that on Pd powder. At 1.5 MPa and 523 K, stable activity was achieved after 48 h on stream and all **catalysts** showed a selectivity of 83-90% to oxygenates (excluding CO₂), with over 90% of this fraction composed of CH₃OH. The average activation energy for methanol synthesis was 19.6 ± 0.8 kcal mol⁻¹, and TOFs varied from 1.6-6.1 + 10⁻³ s⁻¹. When these results are combined with those of the previous study of C. Sudhakar and M. A. Vannice (1985), the patterns for methanation at 0.1 MPa and CH₃OH synthesis at 1.5 MPa are established as a function of the position of the REO in the **periodic table**. There is a clear influence of the **support** on catalytic properties: a correlation exists between the CH₄ TOF and the activation energy for elec. conductivity, and the TOF for CH₃OH synthesis shows a strong correlation with the basicity of the REO, which varies with the lanthanide contraction. The possibility of a heterogeneous analog of the Cannizzaro reaction is pointed out, and this route may also influence methanol formation.

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